

appearing also (as I submit) of a rudimentary or intermediate nature. (Note 2.)

Note 1.—I am aware that “*ἰμῶν*” also signifies “membrana,” but assume that the word was elegantly used, originally, to denote the *peculiar* feature of the wings of the *Hymenoptera*, which the *yoked-connection* or *union* (quasi *matrimony*) between them presented, because used in the former sense of “membrane,” it is quite as applicable to the *Homoptera*, *Diptera*, *Lepidoptera*, &c. which would deprive the name of its significance. In either case, however, it is now equally inappropriate.

Note 2.—Linnæus appears to have propounded an observation nearly approaching the above, when he says, “*Hemelytra media quasi alas inter et elytra*” (Syst. Nat. ed. 12, i. 534), though he was unacquainted with the existence of the uniting apparatus between the wings, which is the ground of the above proposition.

## XV. *Observations on the Destruction of the Apple Crop by Insects.* By W. SPENCE, Esq., F. R. S., &c.

[Read August, 1838.]

AFTER spending five weeks very pleasantly at Cheltenham, we bent our course, about three weeks ago, to this charmingly romantic watering place (Malvern), where, being close to the great cider districts of Herefordshire and Worcestershire, my attention has been so strongly attracted by the deplorable failure of the apple crop, and the apparent probability of its being caused by insects, that I cannot help addressing you to suggest whether it might not be desirable that the Entomological Society should institute an investigation into the cause of the mischief, which (as by all accounts it extends to Devonshire and throughout the kingdom, the cider growers declaring that where they usually made fifty casks they will not this year make five) will evidently cause a very serious loss, of which, in every point of view, it would be creditable to us at least to attempt to ascertain the cause; and this, it strikes me, might be best effected by calling upon such of the members as reside in the apple districts to communicate their observations, and to make inquiries as to the facts of the case.

I have of course made inquiries of the farmers near here, who gave me just the answer I expected—“Oh, a blight, caused by

the frosty nights in May." But that mere direct frost was not the cause, seems proved by their own distinct statement, that the blight took place *before* the full expansion of the blossom, which, it is well known, will bear a very severe cold before being unfolded. From such observations as I have been able to make, I am strongly inclined to suspect that the real cause of the "blight" is a pinkish coloured *Aphis*, of which I have invariably found swarms in the few leaves immediately surrounding the dead calyxes of the abortive tufts of blossom, or their most abundant exuviae, when the leaves being completely killed and blackened, were deserted for more succulent pasture. Of their number an idea may be had from the fact that on one single apple leaf at the base of a tuft of dead blossom, I found *nine* pupæ of *Coccinella bipunctata*, which had evidently in their larva state found ample food from the *Aphides* close to them.

Now it is in this way that I conceive the mischief has been done. The few leaves accompanying a tuft of apple blossom are but half or one-third expanded when the blossom unfolds; but still there can be little doubt that they furnish the supply of sap (whether in its first or elaborated state, the vegetable physiologists must decide) which is to forward and complete the expansion of the blossom. If, therefore, this sap be intercepted by numerous *Aphides* just before the blossom is about to open, nothing can be more likely than that the blossom should not expand at all, but die and become abortive, as has actually taken place. And this supposition seems strongly confirmed by what I have repeatedly observed as to the *fruit*, viz. that whenever a single apple or cluster of two or three, as are now and then seen, have their *full size* and a healthy aspect, they are always accompanied by healthy and fully-expanded leaves, without any appearance on them either of *Aphides* or their exuviae; whereas in the cases, which also occur occasionally, of one or more apples having survived in a tuft whose leaves have been attacked by *Aphides*, they are invariably deformed and not *one-fourth* of their proper size—in fact, mere abortions. Why the attacks of this *Aphis* have been so much more general and fatal this year than usual, may, I think, be explained by the very backward spring; owing to which, broods of young *Aphides* were hatched before the leaves were out, and probably subsisted on the sap of the *buds* of the apple trees, and were thus able in full force to assail the leaves the moment they expanded, and at once drain them of all their fluid; just as I observed, this spring, the tinged *buds* of sycamores, a full week or more before a single leaf was out, to be *covered*

with a numerous brood of very young *Aphides*, which subsequently I saw had transferred themselves to the leaves when they appeared.

I throw out these hasty ideas just as they suggest themselves, without at all considering them as leading to any conclusive result, which can only be obtained by far more extensive and minute inquiries than I have had an opportunity of making, and especially by observations began on the spot from the earliest commencement of the mischief, the communication of which I conceive might be obtained in the way already suggested, and which may very probably show that other causes have been concerned. It is very probable that this subject has already received the attention of the Society, but it so often happens that one errs by taking matters of this sort for granted, that I thought it best to run the risk of making a superfluous suggestion. Every thing connected with cider becomes now of additional interest, if what has been lately stated in a Devonshire paper in bewailing the failure of their apple crop be correct, that there is now a considerable and increasing export of it to Turkey, those good casuists, the Mussulmans, having found out that, not being *wine*, it cannot come under their prophet's prohibition.

Hops, in Worcestershire, are as complete a failure as apples. In addition to the hosts of *Aphides*, a *Haltica* has riddled the leaves like network.

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